[redacted]

M-d

Black Canyon Oil Co. #1
NE/4-NE/4 Sec 20 Twp 16N R 17E 99
Navajo County No Permit

County Navajo

Area Holbrook

Lease No. _____

Well Name Black Canyon Oil Company #1

Location NE NE Sec 20 Twp 16N Range 17E Footage _____

Elev 5615± Gr _____ KB _____ Spud Date _____ Complete Prior to Abandon Nov. 1927 Total Depth 476

from USGS McCauley Sinks 7½' quad per C.E.D.

Contractor: _____ Approx. Cost $_____

Drilled by Rotary ___
Cable Tool ___

Casing Size	Depth	Cement

Production Horizon _____

Initial Production D & A

REMARKS: _____

Elec. Logs (1)

Sample Log X
Sample Descript X
Sample Set _____
Cores _____

Applic to Plub ___ Plugging Record ___ Completion Report ___

Water well - accepted by _____

Bond Co. & No. _____

Bond Am't $_____ Cancelled _____ Date Organization Report _____

Filing Receipt _____ dated _____ Well Book ___ Plat Book ___

Loc. Plat _____ Dedication _____

9-9

PERMIT NO. None Date Issued _____

9-9

BOND NO. _____

AMOUNT _____

CANCELLED _____

ORGANIZATION REPORT _____

No Permit

9-9

LOG OF BLACK CANYON WELL

Sec. 20 T. 16 N., R. 17 E. 25 miles SW Holbrook
abandoned at 510'

Depths of Formations	
0	coconino
21	lime merging to sandstone
22	brown lime - very hard
48	coconino sandstone, hard
55	coconino sandstone, softer
103	coconino sandstone badly cracked up, hard
109	coconino sandstone evenly stratified, lime nodules
136	coconino sandstone, lime nodules predominating
156	coconino sandstone evenly stratified, hard
157	coconino sandstone very thin strata with lime
165	coconino sandstone and lime, gas
201	coconino sandstone fine grained, light brown, gas, some oil
200	shale or clay, no core, high test for oil
208	lime sandstone, hard, probably impervious
233	alternating hard and soft strata, some core missing
234	hard lime, gas, some oil
236	fairly soft sandstone
241	coconino sandstone and lime, spotted rings test oil
244	shale or clay, test for oil same as 201 to 205
260	coconino sandstone and lime nodules
284	coconino sandstone fine grained, small cracks
315	coconino sandstone coarser grained
316	coconino sandstone, brown
319	coconino sandstone, white
321	coconino sandstone, brown
334	coconino sandstone, white
336	lime sandstone, brown, very hard
355	coconino sandstone, possibly some sand, heavy gas pressure
370	coconino sandstone, white, spots oxidized iron
382	coconino sandstone lime nodules
386	coconino sandstone specked by iron oxide
411	coconino sandstone, white to light brown
416	coconino sandstone, thin brown strata
422	coconino sandstone, white
423	shale or clay
427	coconino sandstone white, brown strata
428	shale or clay
429	loose, open formation, no core
447	coconino sandstone, light to brown
447	gypsum
452	coconino sandstone, lime nodules, gas
476	coconino sandstone fine grained, badly split and softer, gas at intervals

Log of
BLACK CANYON OIL COMPANY - Well No. 1.
NE NE, Sec. 20, T. 16 N., R. 17 E., G&SRM.
Drilling ceased prior to November, 1927.
Patented land - State of Arizona
County - Navajo
Field - Holbrook Area
District - Farmington

Depth	Formation
0	Coconino
21	Lime merging to sandstone
22	Brown lime, very hard
48	Coconino sandstone, hard
55	Coconino sandstone, softer
103	Coconino sandstone, badly cracked up, hard
109	Coconino sandstone, evenly stratified; lime nodules
136	Coconino sandstone, lime nodules predominating
156	Coconino sandstone, evenly stratified, hard
157	Coconino sandstone, very thin stratum, with lime
165	Coconino sandstone and lime; gas
201	Coconino sandstone, fine grained, light brown; gas, some oil
200	Shale or clay, no core; high test for oil
208	Lime sandstone, hard; probably impervious
233	Alternating hard and soft strata; some core missing
234	Hard lime; gas, some oil
236	Farily soft sandstone
241	Coconino sandstone and lime; spotted rings test oil
244	Shale or clay, test for oil same as 201 to 205
260	Coconino sandstone and lime nodules
284	Coconino sandstone, fine grained, small cracks
315	Coconino sandstone, coarser grained
316	Coconino sandstone, brown
319	Coconino sandstone, white
321	Coconino sandstone, brown
334	Coconino sandstone, white
336	Lime sandstone, brown, very hard
355	Coconino sandstone, possibly some sand, heavy gas pressure
370	Coconino sandstone, white; spots oxidized iron
382	Coconino sandstone, lime nodules
386	Coconino sandstone, specked by iron oxide
411	Coconino sandstone, white to light brown
416	Coconino sandstone, thin brown stratum
422	Coconino sandstone, white
423	Shale or clay
427	Coconino sandstone, white, brown stratum
428	Shale or clay
429	Loose, open formation; no core
447	Coconino sandstone, light to brown
447	Gypsum
452	Coconino sandstone; lime nodules; gas
476	Coconino sandstone, fine grained, badly split and softer; gas at intervals.

Correlation: all Coconino Ss.

Log of
BLACK CANYON OIL COMPANY - Well No. 1.
NE NE, Sec. 20, T. 16N., R. 17E., G&SRM.
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447	Gypsum
452	Coconino sandstone; lime nodules; gas
476	Coconino sandstone, fine grained, badly split and softer; gas at intervals.

Correlation: all Coconino ss

NE Sec. 20 T16S R17E Navajo Co.
Black Canyon Oil Co. Nov. 1927
Cores lying on ground

0 476 ss gas at 160, 190,
Oil at 170, 235

No permit

No permit

USGS WSP 836-B

River Valley. Water

Water at 320 feet from

River Valley. Water
cased off (?).
Water from sandstone

c. 35, T. 18 N., R. 19 E.,
mitted to flow openly.
Water from quicksand

ar Leroux Wash. Shal-
h; not enough water for
bandoned.
l and sand in valley fill.

wo points. Water from

narump or Moenkopi (?).
and and gravel in valley

r from sand and gravel in

ery salty.
n coarse gravel in valley

ay. Two points. Water

gether. Two points each.

erco Valley. Two points.
nute.
sand and gravel in valley

ary of Rio Puerco. Water

, 18 N., R. 23 E., in Little
feet. Quality good.
o points. Water from sand

Two wells; one may be in
allons a minute each.
Two wells, two points each.

Valley. Water from coarse
Yields 10 gallons a minute.
ater from sand and gravel in

across arroyo. Water from

lls in Little Colorado River

o River Valley. Water from

y. Water from sandstone in

y. Water from sandstone in

alley. Water from sandstone
bought this well for city
from sandstone in Coconino.

sandstone in Coconino at 199

P/N
9-29

*95. Holbrook Light & Power Co., SW¼ sec. 6, T. 17 N., R. 21 E., in Little Colorado River Valley. Bad water from sand and gravel in valley fill. Present supply of Holbrook.

96. Atchison, Topeka & Santa Fe Ry., well 3, sec. 6, T. 17 N., R. 21 E., in Little Colorado River Valley. Water from sand and gravel in valley fill. Yields 430 gallons a minute. Struck sandstone at 137 to 139 feet. See log, page 94.

97. Atchison, Topeka & Santa Fe Ry., well 1, sec. 6, T. 17 N., R. 21 E., in Little Colorado River Valley. Water from sand and gravel in valley fill. Yields 400 gallons a minute. Sandstone at 134 to 136 feet. See log, page 94.

98. Woods Well, east of American Telephone & Telegraph Building, on hill south of Holbrook, in sec. 7, T. 17 N., R. 21 E. Water from sandstone in Coconino, which is near the surface in this locality.

*99. —— Eubanks, sec. 25 or 27, T. 17 N., R. 22 E., on low, broad flat. Water from sandstone and sandy shale in Moenkopi, salty. Yields 20 to 25 gallons a minute.

100. Sec. 36, T. 17 N., R. 22 E. Not visited. Yields very little salty water.

101. Sec. 6, T. 17 N., R. 23 E. Not visited. Water from gravel. Yields 5 gallons a minute.

102. Cedar Ridge Land & Development Co., Black Canyon lease, sec. 20, T. 16 N., R. 17 E., on Kaibab upland. Dry hole. See Arizona Univ. Bull. 119, p. 204.

103. Carlos Castillo, sec. 28, T. 16 N., R. 20 E., on upland. Water from sandstone in Coconino, also poor water at 22 feet.

104. Apache Railroad, sec. 16, T. 16 N., R. 21 E., on upland. Water from sandstone in Coconino, top at 325 feet. No draw-down when pumped. Well not in use.

*105. Well at foot of Woodruff Butte, sec. 8 (?), T. 16 N., R. 22 E. Brackish water from sandstone in Moenkopi (?). Well not in use.

*106. Woodruff Domestic Water Co., sec. 20, T. 16 N., R. 22 E., in Little Colorado River Valley. Water from sandstone in Coconino. Town of Woodruff supply.

107. Padilla ranch, sec. 21, T. 17 N., R. 23 E. No data.

108. National Park Service, Petrified Forest, sec. 1, T. 16 N., R. 23 E., in valley. Salt water at 609 feet. Camp use; unfit for drinking. See log, page 94.

109. Holbrook Oil Co. test well, NE¼ sec. 23, T. 15 N., R. 18 E., on upland. Drilled in 1922 to about 2,400 feet; later deepened to about 3,400 feet.

110. Hopi Oil Co., sec. 21, T. 15 N., R. 19 E., on upland. See log, page 95.

*111. J. M. Flake, NE¼ sec. 17, T. 15 N., R. 21 E., on upland. Water from sandstone in Coconino.

112. Fred Baca, sec. 7, T. 14 N., R. 19 E., on big flat at edge of Dry Lake. Water from sandstone in Coconino.

113. Adamana Oil & Land Co., sec. 4, T. 14 N., R. 20 E., on upland. Drilled for oil in 1920-24. See log, page 95.

*114. City utility, Snowflake, NE¼ sec. 26, T. 13 N., R. 21 E., in Silver Creek Valley. Water from sandstone in Coconino. Town of Snowflake supply.

*115. N. Porter, Phoenix, sec. 10, T. 13 N., R. 22 E., on upland. Water from sandstone in Moenkopi. Can be pumped dry.

*116. Open well in Heber, SW¼ sec. 13, T. 12 N., R. 16 E., in Black Canyon. Water from gravel in valley fill.

*117. Well at Aripine post office, sec. 28, T. 12 N., R. 18 E., in valley in foothills. Water from gravel in valley fill.

*118. J. H. Allen, Taylor, sec. 2, T. 12 N., R. 21 E., in Silver Creek Valley. Water from sandstone in Moenkopi (?).

119. Several wells at Clay Springs, sec. 11, T. 11 N., R. 19 E., in valley. Water from gravel and Recent sand, at contact of sand and underlying shale.

120. Peterson ranch, N½ sec. 4, T. 10 N., R. 20 E., in wash. Several shallow wells. Water from gravel in valley fill.

121 and 122. Standard Lumber Co., Standard, NE¼ sec. 17, T. 10 N., R. 20 E. Trench dug to shale below gravel feeds into box sunk to collect water. Enough water to operate large sawmill.

123. Standard Lumber Co., Standard, sec. 17, T. 10 N., R. 20 E., on upland. "Malpais" to 90 feet, then clay to 492 feet. Flows 5 gallons a minute.

124. Several wells at or near Showlow, sec. 20, T. 10 N., R. 22 E., in Showlow Creek Valley. Water from gravel in valley fill. Some wells went 50 feet into shale, with no water.

125. Three wells in Pinetop, sec. 5, T. 8 N., R. 23 E., on upland. Dug in lava boulders, gravel, and sand. As Pinetop is underlain by cinders at a depth of about 20 feet, it is necessary that wells be shallow, or water will penetrate cinder beds and escape. Public supply of Pinetop comes chiefly from Pinetop Springs, through ditches.

126. U. S. Forest Service, SW¼ sec. 29, T. 11 N., R. 20 E., on upland. Dry hole. See log, page 96.

127. U. S. Forest Service, SE¼ sec. 32, T. 11 N., R. 20 E., on upland. Water from sandstone at 46 feet. See log, page 96.

*130. J. W. Bennett, sec. 33, T. 23 N., R. 31 E., in canyon in Rio Puerco Valley. Two wells. West well, water from quicksand in Wingate (?); yields 10 gallons a minute. East well, water from sandstone in Wingate (?); yields 2,000 gallons a day.

The Holbrook boring (No. 1) about three miles west of the Hopi hole is reported to have entered red shale at 511 feet, which continued to 935 feet, interrupted by limestone from 680 to 692 feet and by gypsum at intervals from 692 to 865 feet and some salt from 855 to 935 feet. Apparently there are local salt basins in Permian and Pennsylvanian strata in this region.

The westernmost bore hole, which is at the Black Canyon claim in Section 20, T. 16, R. 17, was sunk 476 feet with diamond drill. The cores were nearly all light colored sandstone (Coconino). Some layers were found to contain considerable calcium carbonate and a few thin layers of shale were penetrated. The mesa at this place is capped by the thin Kaibab limestone, the upper part very sandy. A boring for water at Winslow had reached a depth of 965 feet late in 1924 all in Coconino sandstone below 100 feet. The overlying Kaibab was thin.

The thinning of the Kaibab limestone in the plateau south of Holbrook is an interesting feature which has been described in considerable detail on a previous page. It results in the disappearance of the formation at Holbrook, although its thin edge is well characterized a short distance south of that place and near Winslow and Snowflake. It is absent in the basin northeast of Holbrook and in the Defiance uplift where the Moenkopi formation, and to the northward the Shinarump conglomerate, lies on the Coconino sandstone.

As shown in Plate 52, the dome of the Holbrook region trends northwest and finally flattens out in the monocline southeast of Winslow. It is broad and flat to the southeast along the Little Colorado River, which cuts a canyon across it, mostly with walls of Coconino sandstone, from near Snowflake to Holbrook. Woodruff Butte consists of Moenkopi, Chinle, and Shinarump beds in a shallow basin, capped by basalt (See Pl. 60a.) Possibly the vent from which this latter rock came is in the butte. Just east of Taylor there is a small local dome in which the Coconino sandstone is revealed overlain by yellow sandy Kaibab limestone only a few feet thick.

The Sinks are on the south slope of the large dome, about 10 miles northwest of Snowflake. There are 30 or 40 of them, ranging from a few yards to 100 yards in diameter, in an area about a mile in length, and all near or on the steep dip to the south. Most of them expose sandstone of Coconino aspect (see Pl. 60b), overlain by Kaibab limestone, here 20 or 30 feet thick. Undoubtedly this sandstone is underlain by a limestone member which has been removed in places by solution in underground waters passing into the valley of Dry Lake to the southward.

This latter valley is a syncline filled with Moenkopi formation, as shown in the cross section (Fig. 28), which extends nearly to Chevlon Canyon. In the center of the basin, southwest of the Sinks, are two buttes capped by Shinarump conglomerate.

The Moenkopi extends far up the slopes south of Dry Lake Valley, and on an irregular surface of this formation and in places overlapping on to the Kaibab limestone, is the cap of Upper Cretaceous strata which

P/N 9-9

extends from
To the south
east by the ign
The Cretac
which is at i
A section at t
Wash shows
The upper h
coaly shale at
sandstone, 6
top Kaibab.
lying on a thi
South of T
tion is similar
lies on sandy
sented by 2
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about 20 fee
sively exposed
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massive sands
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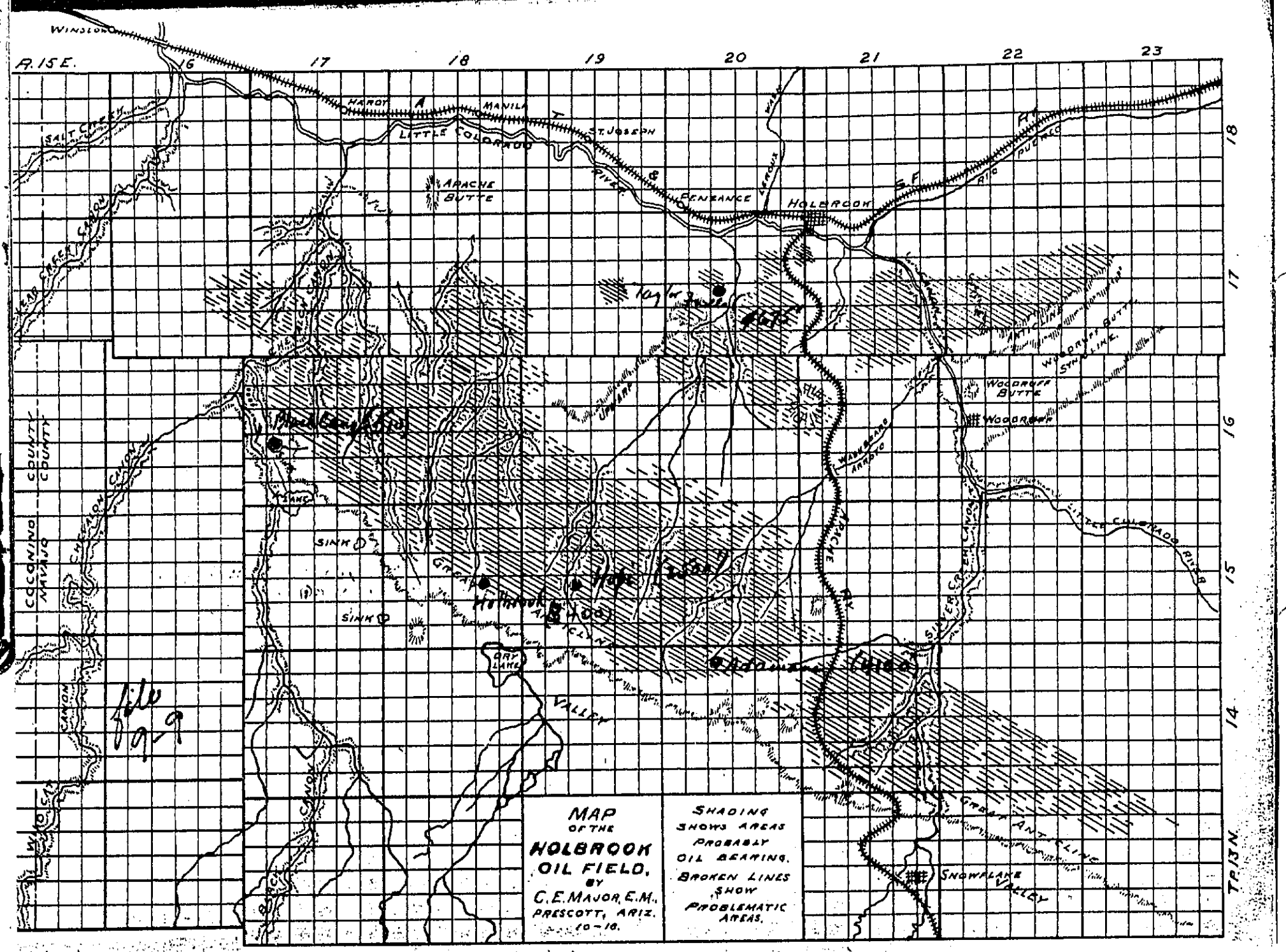
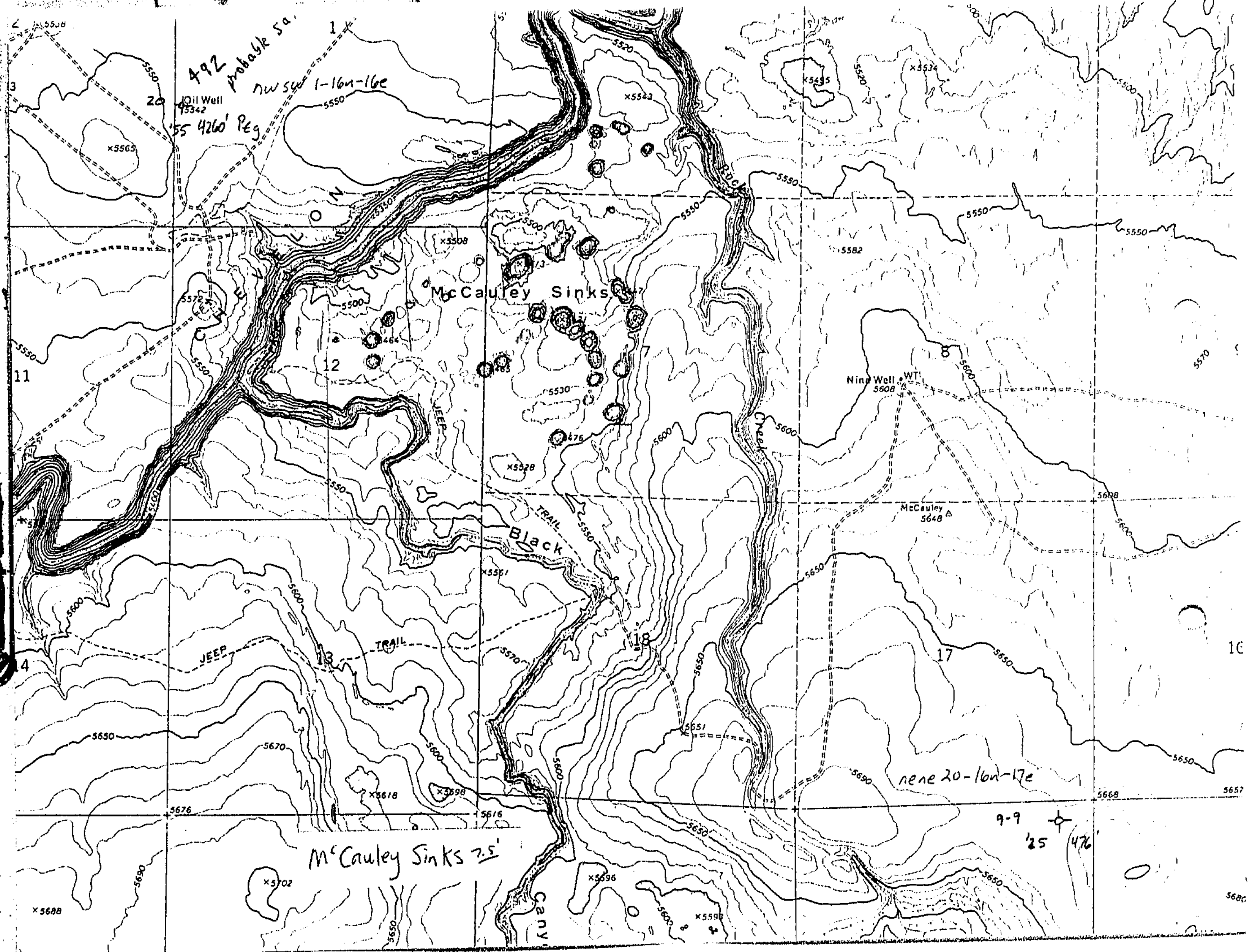

WINSLOW
R. 15 E.
16
17
18
19
20
21
22
23
18
17
16
15
14
T. 13 N.
HAROY
MANILA
ST JOSEPH
LITTLE COLORADO RIVER
SALT CREEK
APACHE BUTTE
PENRANCE
HOLBROOK
L. F. R. R.
SANTA FE PACIFIC R.R.
WOODRUFF BUTTE
WOODRUFF
WOODRUFF ANTICLINE
LITTLE COLORADO RIVER
SINK
SINK
SINK
GRAY LAKE
VALLEY
CANYON
CANYON
CANYON
GREAT ANTICLINE
SNOWFLAKE VALLEY
COCONINO COUNTY
NAVAJO COUNTY
MAP OF THE HOLBROOK OIL FIELD, BY C. E. MAJOR, E.M., PRESCOTT, ARIZ. 10-16.
SHADING SHOWS AREAS PROBABLY OIL BEARING. BROKEN LINES SHOW PROBLEMATIC AREAS.


McCauley Sinks
Black
Creek
Rock
Cany
Nine Well
WT
McCauley 5648
JEEP TRAIL
TRAIL
Oil Well 5342
492 probable sa.
nw sw 1-16n-16e
'55 4260' Peg
nene 20-16n-17e
9-9
'25
476'
McCauley Sinks 7.5'

NRNE 20 | NAVAJO Co. 9-9

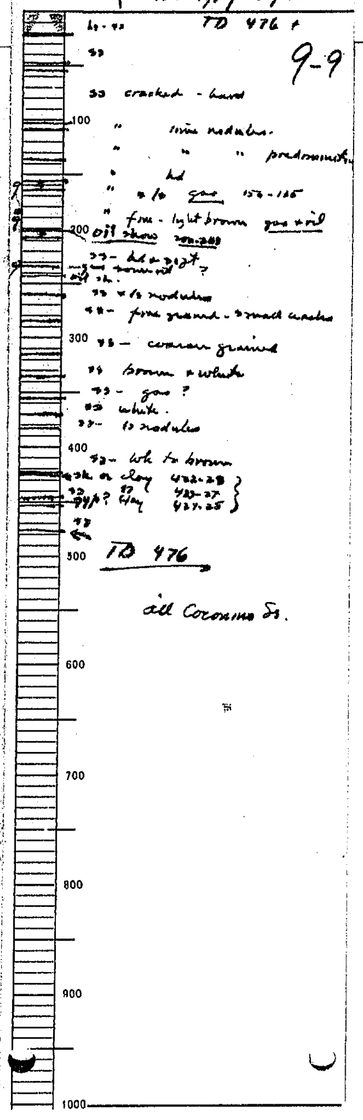
T. 16N R. 17E | Black Canyon Oil COMPANY

16N-17E-20-1 NO. 1

COMMENCED 19

COMPLETED Prior to Nov 1927

ELEVATION 5700 ± | REMARKS: Core drill 7" - cores lying on ground.



Log of BLACK CANY

Depth

9-9

NE Sec. 20 T16N R17E Navajo Co.
Black Canyon Oil Co. Nov. 1927
cores lying on ground

0	476	ss gas at 160, 190, oil at 170, 235

NW NE Sec. 21 T15N R19E Navajo Co.
Hopi Oil Co.

0	465	Coconio ss cross beded bas
465	625	red ss
625	680	sd and ls
680	710	gray ss and water
710	1075	red sh and salt
1075	1200	black sdy sh
1200	1285	salt
1285	1550	red ss and salt
1550	1590	hard ls
1590	1725	red, ss salt
1725	1780	black ls - hd
1780	1875	chunky, pebbly, sd? oil??
1875	1985	salt, sd and mud. no water.

Log of Well No. 1
BLACK CANYON OIL COMPANY - NE NE, Sec. 20, T. 16 N., R. 17 E., G&SRM.
Drilling ceased prior to November, 1927..
Patented land - State of Arizona
County Navajo
Field Holbrook area
District Farmington

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